

What Is Claimed Is:

1. A method for carrying out emission spectrometry, in particular laser emission spectrometry,

in which a pulsed laser beam is focussed automatically on a workpiece to generate a laser-induced plasma,

in which the radiation emitted by the plasma is detected and elemental analysis is performed with the detected radiation spectrum,

wherein

prior to generating the plasma, in addition to determining the distance d of the auto-focussing optic from the surface of said workpiece, additional geometry parameters $P_1, P_2 \dots P_N$ of a potential measuring location on said workpiece surface are determined,

and an elemental analysis is performed for only the potential measuring locations where at least one of said additional parameters lies within a predefined tolerance range $[T_1 \dots T_2]$.
2. A method according to claim 1,
wherein the angle of incline α of said workpiece surface to the axis of said laser beam present at the potential measuring location is determined as a geometric parameter.
3. A method according to claim 2,
wherein a correction of said emission spectrum is performed if a measured angle of incline α deviates from a predefined value α_k .

4. A method according to one of the claims 1 to 3,
wherein prior to plasma inducement, a surface profile of at least part of said workpiece surface is determined by means of a triangulation process and from said surface profile said additional geometric parameters are calculated.
5. A method according to one of the claims 1 to 4,
wherein a plasma is induced only at those locations at which all said predefined geometric parameters lie within said tolerance range.
6. A method according to one of the claims 1 to 5,
wherein the predefined geometric parameters concerning type and tolerance range correspond to those geometric parameters of which a calibration curve had been plotted.
7. A method according to one of the claims 1 to 6,
wherein said laser beam is deflected transverse to the direction in which the test object is moving.
8. A method according to one of the claims 1 to 7,
wherein parts moving on a belt are measured.
9. A method according to one of the claims 1 to 8,
wherein scrap aluminum or scrap electric parts are measured.
10. A method for carrying out emission spectrometry, in particular for carrying out laser emission spectrometry according to one of the preceding claims,

in which, to generate a laser-induced plasma, a pulsed laser beam is automatically focussed on a workpiece,

in which the radiation emitted by the plasma is detected and elemental analysis is performed using the detected radiation spectrum,

wherein

laser beam impingement occurs with an adjustable pulse interval ΔT .

11. A method according to claim 10,
wherein the ΔT values lie within a predefined tolerance range $[\Delta T_{\min} \dots \Delta T_{\max}]$.
12. A method according to claim 10 or 11,
wherein if a detection device detects a test object, a shorter pulse interval is selected than if no test object is detected.
13. A method according to one of the claims 10 to 12,
wherein if said detection device detects no test object a pump pulse is released but no laser pulse is released.
14. A method according to one of the claims 10 to 13,
wherein said pulse interval ΔT is set individually for each pulse.
15. A method according to one of the claims 10 to 14,
wherein the limits of said tolerance range ΔT_{\min} respectively ΔT_{\max} are determined individually for each pulse.
16. A method according to one of the claims 10 to 15,
wherein the pulse interval $\Delta T_{\text{average}}$ lying in temporal average varies around a desired value $\Delta T_{\text{desired}}$.
17. A device for emission spectrometry, in particular for laser emission spectrometry, comprising a pulse laser for generating a laser-induced plasma on a workpiece, an auto-focussing device for the laser beam, a detector for detecting the radiation emitted by the plasma and a device for carrying out elemental analysis,
wherein

a unit for deflecting said laser beam and/or a means for measuring the sample surface transverse to the direction in which the test object is moving are provided.